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CEHIC, KENAN	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/532,127	TIMUS ET AL.	
	Examiner	Art Unit	
	KENAN CEHIC	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-19 and 22-43, 45-52, 54, 55* is/are rejected.

7)☒ Claim(s) *5,6,20,21,44 and 53* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Lan et al. (US 2004/0214582)

For claim 1, Lan discloses A resource allocation method (see figs 23-25) in a communications system (see fig 7) having resources (see section 0018 "timeslot resources"; section 0225 "channel"), said method comprising the steps of:

- dividing said resources into multiple different resource classes based on an associated characteristic allocation time (see figs 5-6, 14a-b; section 0090-93 "timeslot…according to service class" ; section 0203 "timeslots" section 0223-233 " classes…timeslots…timeslot…class 1…class 2…timeslot assignment to a class 1…timeslots…class 2"; section 0243 "timeslots…class.."), for each resource class: determining a resource utilization measure (see figs 23-25 ; S141-142, S151, S154, S162, S165, S168, S171, S175) selecting whether or not to trigger resource allocation based on said resource utilization measure (see figs 23-25; S142-144, S151-155, S162-175).

2. Claims 1, 3, 4, 7, 9, 12-14, 30, 32-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Jurkevich et al. (US 5,282,207).

For claim 1, Jurkevich discloses A resource allocation method in a communications system (i) having resources (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…"), said method comprising the steps of:

- dividing said resources into multiple different resource classes based on an associated characteristic allocation time (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…"), for each resource class:

-determining a resource utilization measure (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding"); and

selecting whether or not to trigger resource allocation based on said resource utilization measure (see col 29 line 49-65 “those T-slot types which exceed…will have bandwidth seized…”; col 6 line 40-55 “exceeding their minimum guaranteed bandwidth” ; col 26 line 25-40 “two or more T-slot types exceed their minimum guaranteed bandwidth”; col 28 lines 40-67 “T-slot type exceeding…bandwidth seized…”).

For claim 30, Jurkevich discloses Communications system (I) (see figs ,1,4, 11a-d) having resources (see col 21 line 35 through col 22 line 64 “T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%...”; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 “minimum guaranteed” col 29 lines 49-55 “T-slot type which is below its minimum guaranteed BW level”; col 4 lines 44-55 “multi–slotted payload…each slot…”), said system (I) comprising:

- means (see figs ,1,4, 11a-d) for dividing (200) said resources into multiple different resource classes based on an associated characteristic allocation time (see col 21 line 35 through col 22 line 64 “T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%...”; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 “minimum guaranteed” col 29 lines 49-55 “T-slot type which is below its minimum guaranteed BW level”; col 4 lines 44-55 “multi–slotted payload…each slot…”); and

-resource allocation means (see figs ,1,4, 11a-d) (100) for performing, for each resource class:- determination of a resource utilization measure (see col 25 lines 40-50 “requesting

T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding"); and-selectively triggering of resource allocation, in dependence of said resource utilization measure (see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…").

For claim 3 and similarly and 32, Jurkevich discloses comparing said resource utilization measure with a threshold (Tk) associated with said resource class (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding"); and-triggering resource allocation if said resource utilization measure exceeds said threshold (Tk) (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6

line 40-55 “exceeding their minimum guaranteed bandwidth” ; col 26 line 25-40 “two or more T-slot types exceed their minimum guaranteed bandwidth”; col 28 lines 40-67 “T-slot type exceeding…bandwidth seized…”).

For claim 32, Jurkevich discloses the processor and the means (see figs ,1,4, 11a-d , see col 9 line 55 through col 10 line 2)

For claim 4 and similarly 19 and 33, Jurkevich discloses wherein a first threshold (TFA~) associated with a first resource class having a first characteristic allocation time is larger than a corresponding second threshold (TsLow) associated with a second resource class having a second characteristic allocation time, said first allocation time being relatively shorter than said second allocation time (see col 22 lines 25-56 (Table III and IV) “Threshold 1…4…50%....90%....Min Guaranteed bandwidth….10%....20%....30%....Max Allowable Bw…50%....30%....Call Black Threshold…4...1....2")

For claim 7 and similarly 34, Jurkevich discloses wherein said dividing step comprises the step of dividing said resources into a first resource class and a second resource class (see col 21 line 35 through col 22 line 64 “T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%...”; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 “minimum guaranteed” col 29 lines 49-55 “T-slot type which is below its minimum guaranteed BW level”; col 4 lines 44-55 “multi–slotted payload…each slot…”), said method comprising the step of calculating said threshold

(TsLow) associated with said second resource class (see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…") based on said threshold associated with said first resource class (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding") .

For claim 9 and similarly 35, Jurkevich discloses wherein an associated characteristic allocation time of a resource class of said multiple different resource classes is a total time required for allocating a resource of said resource class (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi-slotted payload…each slot…") of said multiple different resource classes (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed

BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…").

For claim 35, Jurkevich discloses wherein said characteristic allocation time is a total time required for allocating a resource of said resource class (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…").

For claim 12, Jurkevich discloses wherein said determining step is performed upon a triggering event (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding") selected from at least one of:

- a change in data traffic (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which

exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding") .

For claim 13, Jurkevich discloses comprising the step of selecting any resource to be allocated based on information of QoS requirements (see col 20 lines 15-30 "two major quality of service …packetization delay…bandwidth reservation…"; col 21 lines 10-47 "service quality…bandwidth management…quality of service…"; see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…") for connected user equipment (400; 410) (see figs ,1,4, 11a-d).

For claim 14, Jurkevich discloses further comprising the step of selecting any resource to be allocated based on resource saving estimation information (see col 18 lines 5-68 "indicates frame compression…subscriber inactivity of flow control….bandwidth need be allocated….").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 2 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) in view of Cloonan et al (US 2004/0001493)

For claim 2, and similarly 31, Jurkevich discloses the claimed invention as described above.

For claim 2 and similarly 31, Jurkevich discloses , wherein said determining step and said selecting step are first performed for a resource class a first priority and are then performed for another resource class having a second priority (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum

guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…"); allocation times (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…").

For claim 31, Jurkevich discloses the data processor and selective allocation trigger processor (see figs ,1,4, 11a-d , see col 9 line 55 through col 10 line 2) Jurkevich is silent about:

For claim 2 and similarly 31, a first class having a given characteristic bandwidth and another resource class having a shorter bandwidth than a given characteristic bandwidth. Cloonan from the same or similar field of endeavor discloses a communication network with the following features:

For claim 2 and similarly 31, Cloonan discloses a first class having a given characteristic bandwidth and another resource class having a shorter bandwidth than said given characteristic allocation time than a given characteristic bandwidth (see section 0009-12 "guaranteeing a throughput…guaranteed bandwidths…priority…"; section 0027 "priority level…minimum guaranteed throughput…".

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich by using the above recited

features, as taught by Cloonan, in order to provide a method of guaranteeing a quality of service/ Guaranteed bandwidth to a customer and thus being able to charge a premium rate (see Cloonan sections 0009-12

4. Claims 8 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) in view of Willie et al (US 2004/0252697)

For claim 8 and similarly 37, Jurkevich discloses the claimed invention as described above.

Jurkevich is silent about:

For claim 8 and similarly 37, wherein said resources are radio resources and said method comprising the step of providing said radio resources to user equipment (400; 410) connected to said communications system (1) for enabling utilization of communications services (402; 412, 414) available for said user equipment (400; 410).

Willie from the same or similar field of endeavor discloses a communication network with the following features:

For claim 8 and similarly 37, wherein said resources are radio resources and said method comprising the step of providing said radio resources (see section 0040 "cell capacity…traffic class…" and figs 2-3) to user equipment (400; 410) (see fig 1; MS) connected to said communications system (1) (see fig 1) for enabling utilization of communications services (402; 412, 414) (see section 0040 "traffic classes...voice...realtime data...non-realtime data...") available for said user equipment (400; 410) (see fig 1; MS; section 0024 "mobile").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich by using the above recited features, as taught by Willie, in order to provide a wireless network / link where mobility is desirable and where users do not experience differing QoS levels when changing links / cells (see Willie sections 0004); It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Willies by using the above recited features, as taught by Jurkevich, in order to provide a method of providing priority of transmission / specific network attributes on a per – traffic component basis, so that certain data (voice, packet etc) receive the desired attribute (delay, low packet loss probability etc) so that a desired Quality of service is achieved (see Jurkevich cols 3-4)

5. Claim 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) in view of Tiedeman Jr. et al (US 2005/0135320) and Laasko (US 6,671,512)

For claim 10, Jurkevich discloses the claimed invention as described above.

For claim 10, Jurkevich discloses wherein said dividing step comprises the step of dividing said resources into a first resource class and a second resource class (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type

which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…")

Jurkevich is silent about:

For claim 10, where a resource of said first resource class is allocable with an allocation procedure of a first allocation procedure set and a resource of said second resource class is allocable with an allocation procedure of a second allocation procedure set, said first allocation procedure set comprises at least one of:

- restricting available transport format combinations (TFC) for user equipment (400; 410) connected to said system (1); and

- performing an Adaptive Multi Rate (AMR) mode switch for said user equipment (400; 410),

and said second allocation procedure set comprises least one of:

- performing a channel switch from a dedicated high bit-rate channel to a dedicated low bit-rate channel for said user equipment (400; 410);

- performing a channel switch from a dedicated channel to a common channel for said user equipment (400; 410);

- performing a handover from a first radio access network to a second radio access network for said user equipment (400; 410);

- performing a handover from a first carrier frequency to a second carrier frequency for said user equipment (400; 410); and

- dropping an ongoing call for said user equipment (400; 410).

Tiedeman from the same or similar field of endeavor discloses a communication network with the following features:

For claim 10, where a resource of said first resource class is allocable with an allocation procedure of a first allocation procedure set and a resource of said second resource class is allocable with an allocation procedure of a second allocation procedure set (section 0025-26, 0035, 0085-87, 0098, 0115 "handoff"; section 0045-47 "channel"; section 0061-63 "channel assignment"; section 0114 "reducing data rates…fast reduce capability"), said first allocation procedure set comprises at least one of:

- reducing the rate for user equipment (400; 410) connected to said system (1) (section 0113-0114 "reducing data rates…fast reduce capability"; see fig 1);

and said second allocation procedure set comprises least one of:

- performing a handover from a first radio access network to a second radio access network for said user equipment (400; 410) (section 0025-26, 0035, 0085-87, 0098, 0115 "handoff"; section 0045-47 "channel"; section 0061-63 "channel assignment"; see fig 1);

Laasko from the same or similar field of endeavor discloses the following:

For claim 10, Laasko discloses restricting available transport format combinations (see col 15 line 5-20 "reducing bit rates….limiting the transport format")

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich by using the above recited features, as taught by Tiedeman and Laasko, in order to provide control method can keep the system, i.e. the telecommunication network stable and throttle back the overall load in a controlled fashion and a load margin as the difference between an acceptable (target)

load level and a maximum tolerable load level (threshold) can be reduced which increases the network system capacity and thus represents an advantage for the network operator. (see Laasko cols 1-2); in order to provide a reverse link channel structure capable of achieving high performance for packet data transmission, and which takes into consideration the data transmission characteristics of the reverse links (see Tiderman section 0010-15).

6. Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) in view of Ma (US 6,493,317)

For claim 11, Jurkevich discloses the claimed invention as described above.

Jurkevich is silent about:

For claim 11, wherein said determining step is performed periodically.

Ma from the same or similar field of endeavor discloses a communication network with the following features:

For claim 11, Ma discloses wherein said determining step is performed periodically (see col 7 lines 40-55 "measured…utilization…for different classes is periodically measured…").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the system of Jurkevich by using the above recited features, as taught by Ma, in order to provide provide a multi-class traffic engineering technique which improves inter-class resource sharing efficiency and achieves high network throughput of each class of service in the network. It is also desirable to provide

a multi-class traffic engineering technique that dynamically distributes link resources across different traffic classes based on load conditions of each traffic class. It is further desirable to provide a multi-class traffic engineering technique which is simple in design, and does not require modifications to existing routing algorithms employed for individual service classes within the network (see Ma col 3)

7. Claims 15, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) in view of Tiedeman Jr. et al (US 2005/0135320)

For claim 15 and similarly 36, Jurkevich discloses the claimed invention as described above.

For claim 15 and similarly 36, Jurkevich discloses resource class (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…")

Jurkevich is silent about:

For claim 15 and similarly 36, wherein said determining step comprises the step of estimating a total power of communications links used for said resource.

Tiedeman from the same or similar field of endeavor discloses a communication network with the following features:

For claim 15 and similarly 36, Tiedeman discloses wherein said determining step comprises the step of estimating a total power of communications links used for said resource (see section 0101 "monitors…power…power meter…determine the amount of power received…").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich by using the above recited features, as taught by Tiedeman, in order to provide a reverse link channel structure capable of achieving high performance for packet data transmission, and which takes into consideration the data transmission characteristics of the reverse links (see Tiderman section 0010-15).

8. Claims 16, 18, 19, 22, 25-27, 29, are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) in view of Khurana et al (US 2004/0028054)

For claim 16, Jurkevich discloses A resource allocation system (100) provided in a communications system (1) (see figs ,1,4, 11a-d) having resources (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…"), said resources being divided into muitiple different resource classes based on an associated

characteristic allocation time (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…"), said resource allocation system (100) comprising means (see figs ,1,4, 11a-d) for performing, for each resource class:

- a data processor (see figs ,1,4, 11a-d , see col 9 line 55 through col 10 line 2) for determining, for a resource class, (120) of a resource utilization measure (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding"); and

- a selective allocation trigger processor (see figs ,1,4, 11a-d , see col 9 line 55 through col 10 line 2) for selectively triggering (130) of resource allocation, in dependence of said resource utilization measure (see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…").

For claim 18, Jurkevich discloses comparing said resource utilization measure with a threshold (Tk) associated with said resource class (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding"); and-triggering resource allocation if said resource utilization measure exceeds said threshold (Tk) (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…").

For claim 18, Jurkevich discloses the processor and the means (see figs ,1,4, 11a-d , see col 9 line 55 through col 10 line 2)

For claim 19, Jurkevich discloses wherein a first threshold (TFA~) associated with a first resource class having a first characteristic allocation time is larger than a corresponding second threshold (TsLow) associated with a second resource class having a second characteristic allocation time, said first allocation time being relatively shorter than said second allocation time (see col 22 lines 25-56 (Table III and IV) "Threshold

1…4…50%....90%....Min Guaranteed bandwidth….10%....20%....30%....Max Allowable Bw…50%....30%....Call Black Threshold…4...1....2")

For claim 22, Jurkevich discloses wherein said dividing step comprises the step of dividing said resources into a first resource class and a second resource class (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…"), said method comprising the step of calculating said threshold (TsLow) associated with said second resource class (see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…") based on said threshold associated with said first resource class (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28

lines 40-55 "T-slot type exceeding") .

For claim 25, Jurkevich discloses wherein said determination means (120) (see figs ,1,4, 11a-d). is configured for determining said resource utilization measure in response to triggering input information (see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…"; see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding").

For claim 26, Jurkevich discloses comprising the step of selecting any resource to be allocated based on information of QoS requirements (see col 20 lines 15-30 "two major quality of service …packetization delay…bandwidth reservation…"; col 21 lines 10-47 "service quality…bandwidth management…quality of service…"; see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type

exceeding…bandwidth seized…") for connected user equipment (400; 410) (see figs ,1,4, 11a-d).

For claim 27, Jurkevich discloses further comprising the step of selecting any resource to be allocated based on resource saving estimation information (see col 18 lines 5-68 "indicates frame compression…subscriber inactivity of flow control….bandwidth need be allocated….").

For claim 29, Jurkevich discloses wherein said resource allocation system (100) is provided in a network node (see figs ,1,4, 11a-d) of said communications system (1) (see figs ,1,4, 11a-d).

Jurkevich is silent about:

For claim 16, determining, for a plurality of resource classes, a resource utilization.

Khurana from the same or similar field of endeavor discloses the following:

For claim 16, Khurana discloses determining, for a plurality of resource classes, a resource utilization (see section 0009 "monitor…current utilization of the traffic classes")

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich by using the above recited features, as taught by Khurana, in order to provide a method of known the current utilization of different classes so that an informed decision can be made whether to admit / deny a new request for that particular class (see Khurana section 0009)

9. Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207), and Khurana et al (US 2004/0028054) as applied to claim 16 above, further in view of Cloonan et al (US 2004/0001493)

For claim 17, Jurkevich and Khurana discloses the claimed invention as described above.

For claim 17, Jurkevich discloses , wherein said determining step and said selecting step are first performed for a resource class a first priority and are then performed for another resource class having a second priority (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…"); allocation times (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…").

For claim 17, Jurkevich discloses the data processor and selective allocation trigger processor (see figs ,1,4, 11a-d , see col 9 line 55 through col 10 line 2)

Jurkevich and Khurana are silent about:

For claim 17, a first class having a given characteristic bandwidth and another resource class having a relatively shorter bandwidth .

Cloonan from the same or similar field of endeavor discloses a communication network with the following features:

For claim 17, Cloonan discloses a first class having a given characteristic bandwidth and another resource class having a shorter bandwidth than said given characteristic allocation time (see section 0009-12 "guaranteeing a throughput…guaranteed bandwidths…priority…"; section 0027 "priority level…minimum guaranteed throughput…".

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich and Khurana by using the above recited features, as taught by Cloonan, in order to provide a method of guaranteeing a quality of service/ Guaranteed bandwidth to a customer and thus being able to charge a premium rate (see Cloonan sections 0009-12

10. Claims 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207), and Khurana et al (US 2004/0028054) as applied to claim 16 above, further in view of Urdang et al (US 2007/0089147)

For claim 23, Jurkevich discloses allocating a resource of said resource class (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed

BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…") and the selective allocation trigger processor (see figs ,1,4, 11a-d , see col 9 line 55 through col 10 line 2)

Jurkevich and Khurana are silent about:

For claim 23, characteristic allocation time is a total time required for a device to allocate a resource

Urdang from the same or similar field of endeavor discloses the following:

For claim 23, Urdang discloses characteristic allocation time is a total time required for a device to allocate a resource (see section 0057 "time required for identifying and allocating in the headend")

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich and Khurana by using the above recited features, as taught by Urdang, in order to provide to account for the time needed for processing during allocation in the devices involved in order to calculate the overall allocation delay, thus being able to proper prepare / countermeasure such delay thus providing a user of the network the best experience (see Urdang sections 0005-8, 0057)

11. Claims 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) and Khurana et al (US 2004/0028054) as applied to claim 16 above, further in view of Ma (US 6,493,317)

For claim 24, Jurkevich and Khurana discloses the claimed invention as described above.

Jurkevich and Khurana are silent about:

For claim 24, wherein said determining step is performed periodically.

Ma from the same or similar field of endeavor discloses a communication network with the following features:

For claim 24, Ma discloses wherein said determining step is performed periodically (see col 7 lines 40-55 "measured…utilization…for different classes is periodically measured…").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the system of Jurkevich and Khurana by using the above recited features, as taught by Ma, in order to provide provide a multi-class traffic engineering technique which improves inter-class resource sharing efficiency and achieves high network throughput of each class of service in the network. It is also desirable to provide a multi-class traffic engineering technique that dynamically distributes link resources across different traffic classes based on load conditions of each traffic class. It is further desirable to provide a multi-class traffic engineering technique which is simple in design, and does not require modifications to existing routing algorithms employed for individual service classes within the network (see Ma col 3)

12. Claims 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) and Khurana et al (US 2004/0028054) as applied to claim 16 above, further in of Tiedeman Jr. et al (US 2005/0135320)

For claim 28, Jurkevich and Khurana discloses the claimed invention as described above.

For claim 28, Jurkevich discloses resource class (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guaranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; col 4 lines 44-55 "multi–slotted payload…each slot…")

Jurkevich and Khurana are silent about:

For claim 28, wherein said determining step comprises the step of estimating a total power of communications links used for said resource.

Tiedeman from the same or similar field of endeavor discloses a communication network with the following features:

For claim 28, Tiedeman discloses wherein said determining step comprises the step of estimating a total power of communications links used for said resource (see section 0101 "monitors…power…power meter…determine the amount of power received…").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich and Khurana by using the above recited features, as taught by Tiedeman, in order to provide a reverse link channel structure capable of achieving high performance for packet data transmission, and which

takes into consideration the data transmission characteristics of the reverse links (see Tiderman section 0010-15).

13. Claims 38-42, 45, 47-51, 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) in view of Profumo et al (US 7,016,356)

For claim 38 and similarly 47, Jurkevich discloses A resource allocation method in a communications system (1), said • method comprising the steps of:

providing a guaranteed minimum amount of resources of a first resource class and resources of a second resource class (see col 6 line 35-55 "minimum guaranteed bandwidth"; col 21 line 35 through col 22 line 64 "T-slot…minimum guaranteed bandwidth….T-slot…T-slot type…Min Guaranteed BW…."), a characteristic allocation time of said first resource class being relatively shorter than a corresponding characteristic allocation time of said second resource class (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum guaranteed BW level"; see fig. 9);

- triggering resource allocation for said second resource class (see col 6 lines 35 -55 "flow control undertaken when a request for additional bandwidth…"; col 25 line 40-49 "FRR is granted…bandwidth seizing…"; col 26 line 25-40 "continue requesting more bandwidth…at the expense of triggering call blocking on the other T-slot type(s)…T-slot

type…granted…expense…"; col 29 lines 3-16 "new channel request is made... "; col 29 lines 49-55 "requesting additional bandwidth for a T-slot type which is below its minimum guaranteed BW level"); and

- temporarily allocating a first resource amount of said first resource class during progression of said resource allocation for said second resource class (see col 7 lines 25 – 32 "seizing bandwidth…and redistributing"; col 24 lines 53-65"requested T-slot type current BW usage…"; col 26 lines 5-40 "bandwidth seizing…temporarily reallocate reserved bandwidth from a T-slot type...is requesting additional bandwidth"; col 29 lines 3 -65 "initiates flow control….new channel request is made….flow control is called…bandwidth seizing from those T-slot types is required…T-slot types which exceeds their minimum guaranteed bandwidth…will have bandwidth seized…"; col 30 lines 1-35 "thereby requesting flow control....perform less frequently posting of cells for building…" col 31 lines 1-35 "reduction in bandwidth usage),

whereby a total resource utilization is temporarily reduced during said progression of said resource allocation for said second resource class (see figs 11a-d; see col 23 line 50 -68 "each TFPS…reserve the requested bandwidth…send a rejection…";see col 7 lines 25 – 32 "seizing bandwidth…and redistributing"; col 26 lines 5-40 "bandwidth seizing…temporarily reallocate reserved bandwidth from a T-slot type...is requesting additional bandwidth"; col 29 lines 3 -65 "initiates flow control….new channel request is made….flow control is called…bandwidth seizing from those T-slot types is required…"; col 30 lines 1 through col 31 line 2 "thereby requesting flow control....perform less

frequently posting of cells for building…free up bandwidth….FRR 137 which has been held...is dispatched…no longer congested…relieve the congestion"),

For claim 47, Jurkovich disloses a resource allocation system and means (see figs ,1,4, 11a-d)

For claim 39 and 48, Jurkovich disloses further comprising the step of reallocating a second resource amount of said first resource class (see col 22 lines 40-62 "Max allowable BW…50%...exceed its maximum guaranteed bandwidth…during low traffic condition…") after completion of said resource allocation for said second resource class (see figs 11a-d; see col 23 line 50 -68 "each TFPS…reserve the requested bandwidth…send a rejection…";see col 7 lines 25 – 32 "seizing bandwidth…and redistributing"; col 26 lines 5-40 "bandwidth seizing…temporarily reallocate reserved bandwidth from a T-slot type...is requesting additional bandwidth"; col 29 lines 3 -65 "initiates flow control….new channel request is made….flow control is called…bandwidth seizing from those T-slot types is required…"; col 30 lines 1 through col 31 line 2 "thereby requesting flow control....perform less frequently posting of cells for building…free up bandwidth….FRR 137 which has been held...is dispatched…no longer congested…relieve the congestion"), said second resource amount being equal to or larger said guaranteed minimum resource amount (see col 22 lines 40-62 "Max allowable BW…50%...exceed its maximum guaranteed bandwidth…during low traffic condition…").

For claim 40 and similarly 49, Jurkovich discloses wherein said temporarily allocating step comprises the steps of:

- calculating, for said first resource class, a first resource utilization measure (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding");

- comparing said first resource utilization measure with a first threshold (TFAST) associated with said first resource class (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding"); and

- triggering said temporary resource allocation if said first resource utilization measure exceeds said first threshold (TFAST) (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding").

For claim 41 and similarly 50, Jurkovich discloses, wherein said triggering step

comprises the steps of:

- calculating, for said second resource class, a second resource utilization measure (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding");

- comparing said second resource utilization measure with a second threshold (TsLow) associated with said second resource class (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding"); and- triggering resource allocation for said second resource class: if said resource utilization measure exceeds said second threshold (TsLow) (see col 25 lines 40-50 "requesting T-slot type is below its minimum guaranteed BW…bandwidth seizing…"; col 26 lines 25-40 "requesting T-slot type is below its minimum guaranteed BW ";col 29 line 49-65 "those T-slot types which exceed"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-55 "T-slot type exceeding").

For claim 42 and similarly 51, Jurkevich discloses wherein said reallocation step comprises the steps off

- calculating, for said first resource class, a first resource utilization measure (see col 24 lines 50-65 "granted a request for bandwidth… requested T-slot type BW usage <max allowable") in response to ending said resource allocation for said second class (see col 31 lines 20-68 "BW seizing is no longer needed"; col 32 lines 1-30 "amount of bandwidth to be relinquished…progressively allow more traffic when BW seizing is ceased…");

comparing said first resource utilization measure with a third threshold (h*TFAST) associated with said first resource class(see col 24 lines 50-65 "granted a request for bandwidth… requested T-slot type BW usage <max allowable") ; and

- triggering said reallocation of said second resource amount if said first resource utilization measure is below said third threshold (h*TFAST) (see col 24 lines 50-65 "granted a request for bandwidth… requested T-slot type BW usage <max allowable").

For claim 45 and similarly 54, Jurkevich discloses wherein said communications system (1) (see figs ,1,4, 11a-d) provides streaming services (402; 412, 414) by means of at least one resource of said guaranteed minimum amount of resources (see col 21 line 35 through col 22 line 64 "T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guranteed BW…10%....20%...30%..."; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 "minimum guaranteed" col 29 lines 49-55 "T-slot type which is below its minimum

guaranteed BW level"; see fig. 9) to user equipment (400; 410) connected to said system (1) (see figs ,1,4, 11a-d)

Jurkevich does not explicitly describe:

For claim 38, said first resource amount being relatively smaller than said guaranteed minimum resource amount.

Profumo et al from the same or similar field of endeavor discloses the following.

For claim 38, Profumo discloses said first resource amount being relatively smaller than said guaranteed minimum resource amount (see col 2 line 40-50 "momentarily free a part…this "minimum guaranteed bandwidth").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich by using the above recited features, as taught by Profumo, in order to provide differentiating within broadband services, treatment of connections belonging to different traffic classes, but guaranteeing in the meantime efficient use of all available transmission capacity or bandwidth in a channel (see Profumo col 2 lines 27-40).

14. Claims 43, 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) and Profumo et al (US 7,016,356) in view of Kronz (US 7,072,313)

For claim 43 and similarly 52, Jurkevich and Profumo discloses the claimed invention as described above and further X.

For claim 43 and similarly 52, Jurkevich discloses the user equipment connected to said communication system (see figs ,1,4, 11a-d) utilizing resources of said first resource class

(see col 21 line 35 through col 22 line 64 “T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guranteed BW…10%....20%...30%...”; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 “minimum guaranteed” col 29 lines 49-55 “T-slot type which is below its minimum guaranteed BW level”; see fig. 9) and the guaranteed minimum resource amount (see col 21 line 35 through col 22 line 64 “T-slot minimum guaranteed bandwidth… T-slot maximum allowable bandwidth…T-slot…priority…min Guranteed BW…10%....20%...30%...”; col 23 lines 4-15 "blocking lower priority T-slots"; col 28 lines 45 and col 31 line 5-20 “minimum guaranteed” col 29 lines 49-55 “T-slot type which is below its minimum guaranteed BW level”; see fig. 9)

Jurkevich and Profumo are silent about:

For claim 43 and similarly 52, determining a total packet delay (DTOTAL) comparing said total packet delay (DTOTAL) with a delay threshold (T);

an reallocatin a second amount if said total delay (DTOTAL) exceeds said delay threshold (T), said second amount being equal to or larger than said resource amount

Kronz from the same or similar field of endeavor discloses a communication network with the following features:

For claim 43 and similarly 52, Kronz discloses determining a total packet delay (DTOTAL) (see col 8 linese 35-68 “beyond the delay limit...reassigns from the first channel to the second channel"); comparing said total packet delay (DTOTAL) with a delay threshold (T);

an reallocatin a second amount if said total delay (DTOTAL) exceeds said delay

threshold (T) (see col 8 linese 35-68 "beyond the delay limit...reassigns from the first channel to the second channel"), said second amount being equal to or larger than said resource amount (see col 8 linese 35-68 "beyond the delay limit...reassigns from the first channel to the second channel").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the system Jurkevich and Profumo of by using the above recited features, as taught by Kronz, in order to provide a communication method and network which operates with various changing mixtures of packet lengths with greater throughput efficiency than conventional slotted networks. It would also be advantageous to provide a communication method and network which automatically adjusts the allocation of reserved time slots when traffic loads are high to increase efficiency (see Kronz col 2-3)

15. Claims 46 and 55 rejected under 35 U.S.C. 103(a) as being unpatentable over Jurkevich et al. (US 5,282,207) in view of Tiedeman Jr. et al (US 2005/0135320) and Laasko (US 6,671,512)

For claim For claim 46 and similarly 55,, Jurkevich discloses the claimed invention as described above.

For For claim 46 and similarly 55, Jurkevich discloses reducing allowed bit-rate below a guaranteed minimum bit-rate (see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their

minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…") and said reallocating step comprises the step of increasing said allowed bit-rate to at least said guaranteed minimum bit-rate (see col 29 line 49-65 "those T-slot types which exceed…will have bandwidth seized…"; col 6 line 40-55 "exceeding their minimum guaranteed bandwidth" ; col 26 line 25-40 "two or more T-slot types exceed their minimum guaranteed bandwidth"; col 28 lines 40-67 "T-slot type exceeding…bandwidth seized…").

Jurkevich is silent about:

For claim 46 and similarly 55, wherein said temporarily resource allocating step comprises the step of temporarily by restricting allowed Transport Format Combinations (TFC) and by releasing said imposed TFC restrictions.

Laasko from the same or similar field of endeavor discloses the following:

For claim 46 and similarly 55, Laasko discloses wherein said temporarily resource allocating step comprises the step of temporarily by restricting allowed Transport Format Combinations (TFC) (see col 15 line 5-20 "reducing bit rates….limiting the transport format") and by releasing said imposed TFC restrictions (see col 15 line 5-20 "reducing bit rates….limiting the transport format"; col 16-17 "transport format).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Jurkevich by using the above recited features, as taught by Laasko, in order to provide control method can keep the system, i.e. the telecommunication network stable and throttle back the overall load in a controlled fashion and a load margin as the difference between an acceptable (target) load level and

a maximum tolerable load level (threshold) can be reduced which increases the network system capacity and thus represents an advantage for the network operator. (see Laasko cols 1-2);

Response to Arguments

16. Applicant's arguments filed 05/26/2009 have been fully considered but they are not persuasive.

For claim 1, the applicant argues that Lan does not disclose division of resources into multiple different resource classes based on the associated characteristic allocation time. Lan discloses requesting / assigning resources divided with different service class by using a maximum and minimum number of timeslots, which are used in the QoS request as disclosed in paragraphs 90-93, 0203. The divided resources are associated with different service classes, where the maximum and minimum number of timeslots (characteristic allocation time) is used to do so. The examiner takes the stance that these features disclose dividing the resources (assignment of the resources) where each division is associated with a different resource service class, where such assignment is based on the characteristic allocation time (max, min , desired timeslots); The examiner takes the stance that when dividing the resource each part of the resource has a class, thus certain parts of the resources are class 1, while other are class 2 etc., which has also been pointed out by the applicant on page 41 3rd paragraph of the response ("Lan discloses division of resources into different resource classes"). As previously explained the resources are assigned / divided using the max, min, and desired timeslots, which corresponds to a

"characteristic allocation time". The examiner takes the stance that above discussed disclosure meets the claimed limitations.

For claim 1, the applicant argues that Jurkevich does not disclose dividing resources into multiple different resource classes based on an associated characteristic allocation time. As disclosed in col 21 lines 35 through col 22 line 6 and indicated by the applicant on page 42 1st paragraph of the remarks ("used to divide the resource among the resource classes"), Jurkevich discloses dividing the resources into a multitude of "resource classes" ("quality of service on a per T-slot type basis…T-Slot minimum guaranteed bandwidth…maximum available bandwidth…Table IV….T-Slot type….Min Guaranteed BW…Max allowable BW…"). From this disclosure it is clear that each type of T-slot has a different associated classification (class) of bandwidth associated with it. Further it is clear from the disclosure that T-slot refers to a timeslot (col 4 lines 44-55 "multi–slotted payload…each slot…" and figures 5-6a, 8) which divides the resource and is used / allocated for data transmission. The examiner takes the stance that this teaching corresponds to "an associated characteristic allocation time". Lastly it is clear that the resources (bandwidth) is divided into the T-slots as explained above, where further each T-Slot represents a resource class. Thus effectively, the resources has been divided, where each division is / has a resource class. The examiner takes the stance that the above disclosure meets the claimed limitations. Lastly, the applicant throughout page 42 of the remarks uses limitation "resource classes based on **their respective associated characteristic allocation times**", "resources have **different characteristic allocation**

times". It is pointed out to applicant that such exact limitation are not found in the claims but merely "dividing said resources….based on **an associated characteristic allocation time**".

For claim 38, the applicant argues that "Jurkevich does not disclose that the first and second resource class have **different characteristic allocation times** nor that **the allocation time of the first resource class is shorter that the allocation time of the second resource class**, as **discussed above in connection with claim 1**". It is pointed out to applicant that the recited claim limitations associated with claim 38 are substantially different than those in claim 1 and that those specific claim limitation, as emphasized above, have not been discussed previously by the applicant in connection to claim 1. The examiner is unable to respond to the above allegations since now arguments have bee presented.

For claim 38, the applicant on page 43 of the remarks argues that Jurkevich does not disclose the temporary allocation of a first resource amount of the first resource class is conducted during a progression of the resource allocation for the second class. The applicant does not provide any analysis or reasoning why the the quoted teachings of Jurkevich do not correspond to the claim limitation but merely summarizes some of Jurkevich's teachings. Thus it is unclear to the examiner what the applicant exactly disagrees about with regards to the teachings of Jurkevich. Nonetheless, the examiner takes the stance that allocation of resources is triggered for a class / T-slot type which requires / requests more or new resources, which causes a resource allocation (seizing or

blocking) of resources from a different class / T-slot type. When the request for more or new resources is requested marks the triggering of the resource allocation (allocation of the second resource class), however for the resource allocation to be completed the seizing / blocking of resources of a different class / T-slot type (first resource class) needs to be triggered and approved to free the requested bandwidth. The examiner takes the stance that such teaching discloses the claimed limitations.

Further, for claim 38 the applicant states in the arguments on page 43 2nd paragraph "As admitted, Jurkevich also does not disclose that the temporarily allocated first resource....". It is pointed out for the record that that the examiner merely stated that Jurkevich is silent about " first resource amount being relatively smaller than said guaranteed minimum resource amount"; the temporary allocation is thought by Jurkevich. Lastly, the applicant provides a mere conclusionary statement, without any analysis or reasoning why / how Jurkevich and Profumo do not disclose "(1) using resource classes with **different characteristic allocation times**,

(2) triggering the resource allocation of the resource class with **slower allocation time**, and (3) then temporarily allocating resources from the resource class with **faster allocation time** during progression of the **slower resource allocation**. " Furthermore, the above emphasized limitations are not found in claim 38 and vary significantly in scope from claim 38. The examiner is unable to respond to merely conclusory statements that do not specifically point how and why specific limitation are not disclosed, where further the actual claimed limitations are not argued about.

Lastly, the applicant argues that in the "proposed combination, there is no coordination between triggering resource allocation for the different resource classes as defined in claim 38". It is not completely clear why the applicant brings up the teachings of Profumo and Jurkevich in regards to this argument, however the relation between triggering allocation between different classes is thought by Jurkevich and was discussed previously in this response. Profumo merely discloses the quantitative limitation where a allocated (seized) resource is less than a guaranteed minimum resource amount.

Allowable Subject Matter

17. Claim 5, 6, 20, 21, 44, 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENAN CEHIC whose telephone number is (571)270-3120. The examiner can normally be reached on Monday through Friday 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KWANG BIN YAO can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kenan Cehic/
Examiner, Art Unit 2416

/KWANG B. YAO/

Supervisory Patent Examiner, Art Unit 2416